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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/964,893	09/28/2001	Claus Erdmann Furst	45900-00064	1329

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HARNESS, DICKEY & PIERCE, P.L.C.
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RESTON, VA 20195

EXAMINER

MEI, XU

ART UNIT	PAPER NUMBER
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2615

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 09/964,893	Applicant(s) FURST ET AL.	
	Examiner Xu Mei	Art Unit 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5,7,17,18, 36 and 38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5,7,17,18,36 and 38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is responsive to the applicant's Remarks dated 12/06/2006.
2. The drawings filed 09/28/2001 and 01/03/2002 have been received. These drawings are acceptable.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 5, 7, 17, 18, 36, and 38 rejected under 35 U.S.C. 103(a) as being unpatentable over Martin (US Patent 5,796,848) in view of Arndt et al (US Patent 6,421,448, hereafter, Arndt).

Regarding Claims 1 and 5, Martin discloses a microphone assembly of a hearing aid comprising a microphone assembly casing (6) having a sound inlet port (15), a transducer for receiving acoustic waves through the sound inlet port (1), and for converting received acoustic waves to analog signals (18), said transducer being positioned within the microphone assembly casing, an electronic circuit positioned within the microphone assembly casing, said electronic circuit comprising a signal path

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defined by a cascade of a pre amplifier (8) for amplifying analog audio signal from the transducer, and a sigma-delta modulator for providing digital signals (7). Martin does not disclose the microphone assembly further comprises filter means in the signal path between the pre-amplifier and the sigma-delta modulator to prevent low frequency components from reaching the sigma-delta modulator.

Arndt discloses an audio device having a microphone assembly (Figs. 1 and 2) with a transducer pre-amplifier and analog and digital signal processing unit 5 (A/D converter) including a high pass filter means (3) in the signal path between the pre-amplifier (12) and the digital signal processing unit 5 to prevent low frequency components from reaching the digital signal processing unit; and for limiting the frequency band of the input signals and suppress interference signals of lower frequency (col. 2, lines 5-48). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a high pass filter means in the signal path between the pre-amplifier and the sigma-delta modulator of Martin to prevent low frequency components from reaching the sigma-delta modulator in order to pass only desired signal components to the sigma-delta modulator (A/D converter) for more efficient processing by filtering out undesired signals, and for limiting the frequency band of the input signals and suppress interference signals of lower frequency.

Regarding Claims 7 and 38, it is well known in the art that circuits can be formed on integrated circuits to create a smaller circuit. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the circuit on

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an integrated circuit in order to create a more compact circuit for a small electronic device such as hearing aid as shown by both Martin and Arndt. And Martin further discloses the device is integrated on a monolithic integrated circuit (see Martin Claim 9).

Regarding Claim 17, Martin further discloses the microphone assembly 6 is connected to a signal processor, which inherently teaches a digital signal processor as the signal was converted to a digital signal prior in the A/D converter 7.

Regarding Claim 18, Martin further discloses the unit as a digital hearing aid (abstract). And Arndt's device is also a hearing aid.

Regarding Claim 36, the high pass filter means of Arndt had an upper critical frequency of 100 Hz (Col. 4, line 20-col. 5, line 28) that inherently is a filter for passing a frequency band (broadly read on as a band pass filter).

Response to Arguments

5. Applicant's arguments filed 12/06/2006 have been fully considered but they are not persuasive.

Applicant argued on pages 11-12 of the Remark: Arndt states that "in order for a high-pass filter to reach its limit frequency "...each of the microphones used has a small hole in its membrane, causing the limit frequency-dependent on the diameter of this hole in the membrane--to be shifted to higher values. This shift is necessary to suppress interference signals of lower frequency..." Arndt, col. 2, lines 42-49 (emphasis added). Therefore, Arndt merely states that a small hole in the membrane of each microphone causes the shift, not the high-pass filters as suggested by the Examiner.

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The examiner disagreed. The part in Arndt being recited by the applicant is obviously correct, and clearly as stated "each of the microphones used has a small hole in its membrane, causing the limit frequency-dependent on the diameter of this hole in the membrane--to be shifted to higher values. This shift is necessary to suppress interference signals of lower frequency". The small hole(s) in the membrane of the microphone(s) disclosed by Arndt is used to cause the shift of each of the microphones (3, 3', 30, or 30') to reach its limit frequency, which is about 100 Hz (per col. 2, line 41).

The high pass filters themselves (i.e., 3, 3', 30, 30') are used to suppress these interference signals of low frequency received by the microphones (emphasis added). And this clearly have met the applicant's claimed limitation of "comprising filter means in signal path, the filter means preventing low frequency components". The combinations of Martin and Arndt as discussed in the rejection above would have included the high pass filter means in the signal path between the pre-amplifier and the sigma-delta modulator to prevent low frequency interference components from reaching the sigma-delta modulator.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a

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reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (see applicant's argument in page 12-13 of the Remarks regarding the location or placement of the microphones by Arndt) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

As these are the totality of arguments presented, and they have been found unpersuasive, the existing rejection is deemed appropriate.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of


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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xu Mei whose telephone number is 571-272-7523. The examiner can normally be reached on maxi flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Xu Mei
Primary Examiner
Art Unit 2615
02/22/2007